

Remarks

The Applicants have amended the title to correspond with the title in the English translation of the specification. The Applicants have also amended the specification to place it into better form for allowance. Entry into the official file is respectfully requested.

The Applicants confirm their earlier election of Claims 23 – 38 and 44. The Applicants have accordingly cancelled Claims 39 – 43 and 45 – 47 without prejudice and without disclaimer of the subject matter therein. The Applicants specifically reserve the right to file one or more divisional applications directed to the subject matter of those claims.

Claim 23 has been amended to include the subject matter of Claim 24. Therefore, Claim 24 has been cancelled. Claim 23 has further been amended to clarify that the chromium-free film on the plating layer comprises three separate components, namely 1) at least one metal selected from the group consisting of Al, Mg and Zn; 2) a tetravalent vanadium compound; and 3) a phosphoric acid group. Entry of the changes to Claim 23 into the official file is also respectfully requested.

Claim 44 stands objected to as failing to differentiate between elements by line indentation. The Applicants have accordingly rewritten Claim 44 to include such separate line indentations. The Applicants have further amended Claim 44 to recite that the chromium-free film comprises the three components mentioned above. Withdrawal of the objection is respectfully requested.

Claims 23 – 24, 26 – 30 and 33 – 35 stand rejected under 35 USC §102 as being anticipated by Yoshimi. The Applicants note with appreciation the Examiner's detailed comments hypothetically applying Yoshimi against those claims. The Applicants nonetheless respectfully submit that Yoshimi is inapplicable for the reasons set forth below.

The Applicants have amended Claim 23 to clarify the composition of the chromium-free film. That film comprises 1) at least one metal selected from the group consisting of Al, Mg and Zn;

2) a tetravalent vanadium compound; and 3) a phosphoric acid group. The Applicants respectfully submit that Yoshimi fails to disclose the claimed tetravalent vanadium compound which is a required element in the film. The tetravalent vanadium is not optional and is not part of the Markush group. Thus, the Applicants respectfully submit that Yoshimi fails to explicitly or implicitly disclose all of the elements set forth in independent Claim 23. Withdrawal of the rejection is respectfully requested.

Claims 25 and 44 stand rejected under 35 USC §103 over the hypothetical combination of Sako with Yoshimi. The Applicants note that Sako, namely JP 2001181860, corresponds to CA 2,396,041, a convenience copy of which is enclosed. (A machine translation of Sako is also enclosed.) The Applicants note with appreciation the Examiner's detailed comments hypothetically applying the combination against Claims 25 and 44. However, the Applicants respectfully submit that one skilled in the art would not make the combination and, in any event, the combination would not result in the subject matter of Claims 25 and 44. Reasons are set forth below.

Yoshimi discloses a variety of embodiments that typically include a steel layer, a zinc or aluminum plating layer, an oxide coating with a phosphoric acid component and an organic coating. There are several variations on this basic arrangement. However, the final layer is typically an organic coating layer which is different from the oxide coating layer with phosphoric acid.

The rejection frankly acknowledges that Yoshimi does not teach the inclusion of vanadium in either the oxide coating or the second coating. Thus, the rejection turns to Sako to cure that deficiency and for the proposition that it would be obvious to include the vanadium in the second layer of Yoshimi which likewise includes a resin and a metallic compound. The Applicants respectfully submit, however, that there are a number of problems with this combination. The first problem lies with the fact that a wide variety of metals are disclosed in Sako as being "essential."

Those include vanadium as well as zirconium, titanium, molybdenum, tungsten, manganese and cerium. Moreover, of the vanadium compounds, the vanadium compounds can be selected from valences of 3, 4 and 5. Thus, one skilled in the art would first be faced with the choice of selecting from such a wide variety and identifying the tetravalent vanadium compounds as the compound that is effective.

The Applicants respectfully submit that there is no motivation provided to those skilled in the art to pick tetravalent vanadium compounds out of those available as those disclosed in Sako for combination in Yoshimi. In that regard, it must be remembered that there should be disclosure in both Yoshimi and Sako that would motivate one skilled in the art to modify the Yoshimi coated steel sheets and that there would be some advantage gained by so doing. There does not appear to be such an advantage to pluck one of the number of metals from Sako and hypothetically import them into Yoshimi. Thus, the rejection should fail on this basis alone.

Moreover, in Sako, either trivalent or tetravalent vanadium can be added to the agent. In the Sako examples, however, only b4(vanadium oxy acetylacetonate) in paragraph [0051] of the machine translation corresponds to tetravalent vanadium and Examples 15 and 16 (Table 2) employ that vanadium oxy acetylacetonate. However, since Example 16 contains (e) (reducing agent in paragraph [0053]), tetravalent vanadium is reduced after mixing with the reducing agent. In a similar way, tetravalent vanadium in Example 15 is also reduced by the hydroxyl (OH) group contained in a5 (see Table 1 ☺), because OH group functions as a reducing agent as described in paragraph [0027]. As a result, Sako does not consider the vanadium valence after mixing with the reducing agent at all.

However, there is a far more compelling reason why the hypothetical combination must fail.

In particular, the rejection states that it would be obvious to include vanadium in the second layer of Yoshimi which includes a resin and a metallic compound. The resin in Yoshimi is in the organic coating and is not in the oxide coating together with the phosphoric acid component. Thus, to the extent that Yoshimi can be applied to the various layers recited by the Applicants, the Applicants' film including at least one metal selected from the group consisting of Al, Mg and Zn, a tetravalent vanadium compound and a phosphoric acid group would be comparable to the oxide coating of Yoshimi. That is because the oxide coating of Yoshimi has a phosphoric acid component which is similar to that in the Applicants' claimed film and the oxide coating is typically formed from Mg, Zn, Fr and Ba in Yoshimi. There is at least some degree of overlap with the Applicants' claimed Al, Mg and Zn. Thus, one skilled in the art would readily glean from the teachings of Yoshimi that the Yoshimi oxide coating is most similar to the Applicants' claimed chromium-free film. This is particularly true given the fact that the Applicants' claimed plating layer is overtly similar to the Zn or Al plating layer of Yoshimi.

What does this mean? This means that if one skilled in the art were to look to Sako and hypothetically pluck tetravalent vanadium compounds from Sako (despite the lack of teachings to do so) and import them into Yoshimi, one skilled in the art would import those compounds into the organic coating of Yoshimi and not the oxide coating. This is particularly true given the acknowledgement in the rejection that the vanadium would be included in the Yoshimi layer that likewise includes a resin and a metallic compound.

The Applicants therefore respectfully submit that if one skilled in the art were to hypothetically take the tetravalent vanadium from Sako and import that tetravalent vanadium into Yoshimi, such importation would be included in the organic coating and not the oxide coating of Yoshimi. That would mean that one skilled in the art would need to add a further layer to the

Applicants' claimed combination of steel sheet, plating layer and chromium-free film. One skilled in the art would not import the tetravalent vanadium into the oxide coating of Yoshimi (the Applicants' chromium-free film) because, as acknowledged in the rejection, the vanadium from Sako would be taken from an organic layer including a metallic compound and logically added to a similar organic coating which is already taught by Yoshimi, albeit without the vanadium per se.

The Applicants therefore respectfully submit that even if one skilled in the art were to make the hypothetical combination, that result would add an additional organic layer onto the Applicants' already claimed steel sheet, plating layer and chromium-free film combination and not add the tetravalent vanadium into the chromium-free film. Thus, the combination would result in subject matter completely different from that of Claims 25 and 44. Withdrawal of the rejection is respectfully requested.

Claims 31 – 32 and 36 – 37 stand rejected under 35 USC §102 or alternatively under 35 USC §103 over Yoshimi. The Applicants again note with appreciation the Examiner's detailed comments hypothetically applying Yoshimi against Claims 31 – 32 and 36 – 37. The Applicants respectfully submit, however, that Yoshimi fails to explicitly or implicitly disclose a chromium-free film comprising, among other things, a tetravalent vanadium compound. Withdrawal of the rejection is accordingly respectfully requested.

Claims 31 – 32 and 36 – 37 stand rejected under 35 USC §103 over the hypothetical combination of Yamaji with Yoshimi. The Applicants again note with appreciation the Examiner's detailed comments hypothetically applying the combination against those claims. The Applicants nonetheless respectfully submit that one skilled in the art would simply not make this combination. Reasons are set forth below.

The Applicants respectfully submit that one skilled in the art would not look to Yamaji. In

that regard, the Applicants' specification is replete with discussion in the "Background" section as to the continuously increasing environmental constraints which no longer make the use of films containing chromium, essentially in any form, environmentally acceptable. It is an essential part of Yamaji that the film contains chromium, among other things. Thus, the Applicants respectfully submit that one skilled in the art would not look to Yamaji.

In any event, however, the Applicants respectfully submit that the hypothetical combination would still fail to disclose, teach or suggest the Applicants' chromium-free film which includes, among other things, a tetravalent vanadium compound. Withdrawal of the rejection is respectfully requested.

Claim 38 stands rejected under 35 USC §103 over the hypothetical combination of Lee with Yoshimi. The Applicants respectfully submit that Lee fails to cure the deficiencies set forth above with respect to Yoshimi concerning the claimed chromium-free film containing, among other things, a tetravalent vanadium compound. Withdrawal of the rejection is respectfully requested.

In light of the foregoing, the Applicants respectfully submit that the entire application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,



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